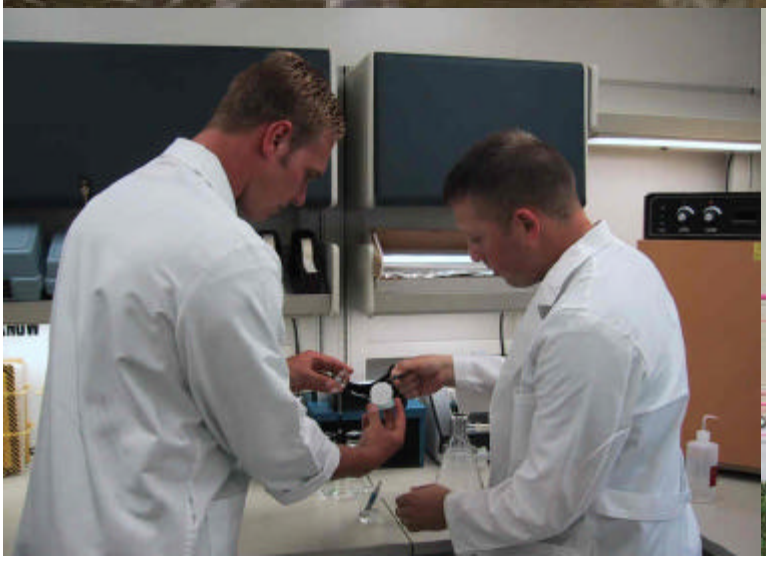
Andersen AFB Drinking Water Consumer Confidence Report

2000



Andersen AFB Drinking Water Consumer Confidence Report 2000

WHAT IS A CONSUMER CONFIDENCE REPORT?
IS OUR DRINKING WATER SAFE?
WHERE DOES ANDERSEN AFB DRINKING WATER COME FROM?
IS OUR DRINKING WATER TREATED?
EPA REQUIRED STATEMENTS
WHAT IS IN OUR DRINKING WATER?
WHERE CAN WE GET MORE INFORMATION?
DEFINITIONS OF KEY TERMS AND ACRONYMS

WHAT IS A CONSUMER CONFIDENCE REPORT?

In 1996, Congress amended the Safe Drinking Water Act [40 CFR part 141], adding a provision that requires all community water systems, such as Andersen AFB, to deliver to their customers a brief annual water quality report called a Consumer Confidence Report (CCR). The first report was due to consumers by October 19, 1999 for 1998 data and by July 1 for each following year. **THIS CCR CONTAINS INFORMATION ON THE SOURCE OF DRINKING WATER FOR ANDERSEN AFB, ITS CONSTITUENTS AND THE HEALTH RISKS ASSOCIATED WITH ANY CONTAMINANTS**. The rationale behind a CCR is that we have the right to know what is in our drinking water and where it comes from so we can make informed choices. Definitions of key terms and acronyms used are at the back of this report.

IS OUR DRINKING WATER SAFE?

Our water has been and continues to be safe to drink. Through the constant treatment and maintenance of Civil Engineering, the sampling and monitoring of Bioenvironmental Engineering and the prevention of pollution by each of us, we receive the best quality water on Guam.

WHERE DOES ANDERSEN AFB DRINKING WATER COME FROM?

Primary Source. Andersen AFB provides drinking water to all base housing and facilities (no longer to Yigo or Dededo) from the Northern Guam Lens aquifer. This groundwater source, underlying the northern portion of Guam, was designated a principal sole-source aquifer by the EPA in 1978, under the provisions of the SDWA. Our drinking water system consists of: nine deep off-base wells which draw from this aquifer; two booster stations which provide chlorine and fluoride treatment; two air stripping towers to remove contaminants, if needed; three tanks located off base to receive and store water from wells; and four main transmission lines.

Alternative sources. Andersen AFB has an agreement with the Navy and GWA to share water via existing connections if necessary. In addition, we have one reverse osmosis treatment unit that can produce drinking water from seawater to sustain about 5,500 personnel. In the event of contamination of the groundwater aquifer or water system, base demand may be partially met by other existing alternative water sources including: bottled water supply, one swimming pool, two water buffaloes (water tank trailers), two water trucks, and water saved from rationing.

IS OUR DRINKING WATER TREATED?

Drinking water drawn from groundwater sources such as ours is inherently better quality than that drawn from surface water sources. This is because the ground acts as a natural filter to remove particulates and contaminants. All of our drinking water is treated with chlorine and fluoride to ensure the health of every consumer. Chlorine acts as a disinfectant to ensure we have no bacterial contamination. Fluoride is added at sufficient levels as recommended by the ADA to prevent dental carries (cavities). It is maintained at levels low enough to prevent dental and skeletal fluorosis, especially in our children.

EPA REQUIRED STATEMENTS

EPA requires that the CCR contain the following statements for our education:

1. The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground it dissolves naturally occurring minerals and, in some cases, radioactive material, and substances resulting from the presence of animals or from human activity. Contaminants that may be present in source water include:

- *Microbial contaminants- such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.*
- *Inorganic contaminants- such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.*
- *Pesticides and herbicides- may come from a variety of sources such as agriculture, stormwater runoff, and residences.*
- *Organic chemical contaminants- including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, can also come from gas stations, urban stormwater runoff, and septic systems.*
- *Radioactive contaminants- can be naturally occurring or be the result of oil and gas production and mining activities.*

2. In order to ensure that tap water is safe to drink, EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

3. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline (1-800-426-4791).

4. Some people may be more vulnerable to contaminants in drinking water than the general population. Immunocompromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the EPA Safe Drinking Water Hotline at 1-800-426-4791.

WHAT IS IN OUR DRINKING WATER?

We constantly monitor for various contaminants in the water supply to meet all regulatory requirements. Bioenvironmental Engineering samples our drinking water for compliance with EPA regulations and to ensure the system is operating effectively. Samples are then either analyzed by Bioenvironmental

Engineering or sent to a Guam EPA-accredited laboratory. Sampling is conducted for the contaminant groups listed in Table 1 at the specified frequencies.

Table 1. Sample Contaminant Groups and Monitoring Frequencies

Contaminant Group	# in Group	Examples	Monitoring Frequency
Biological Contaminants	1	Total coliform, fecal coliform, etc.	Twice per month
Inorganic Contaminants	15	Metals, fluoride, asbestos, etc.	4 quarterly samples every 3 years
Volatile Organic Compounds	21	Benzene, PCE, TCE, etc.	4 quarterly samples every year
Synthetic Organic Compounds	33	Pesticides, herbicides, PCBs, etc.	4 quarterly samples every 3 years
Unregulated Contaminants	35	Chloroform, naphthalene, sulfate, etc.	Once every 5 years
Lead and Copper	2	--	Once every 3 years
Radiological Compounds	4	Gross alpha and beta, radiums, etc.	4 quarterly samples every 4 years
Sodium	1	--	Once every 3 years

Bioenvironmental Engineering collected 190 samples in 2000 and analyzed for 74 different contaminants. In addition, chlorine and fluoride levels are monitored daily by Civil Engineering and weekly by Bioenvironmental Engineering. For any regulated contaminant that was detected, Tables 2-4 list the highest level detected and the range of levels detected. Any other contaminants were not present or were below the detection limits of the laboratory equipment. A description of the coliform detection of total coliforms (✍) is discussed following Table 2.

Table 2. Detected Regulated Biological Contaminants

Contaminant	MCLG	MCL	Level Detected	Range	Violation?	Potential Source of Contaminant
✍ **Total Coliform**	0	2 positive sample/ month	***1 positive sample (Sep '00)***	0 - 1	***No***	Naturally present in environment
Fecal Coliform	0	0 positive samples/ month	***0 positive samples 2000***	0	***No***	Human or animal fecal waste

✍ ***Description of Detection****: During the month of September 2000, the contract laboratory performing the bacteriological analyses reported one positive coliform sample in nine samples. Bioenvironmental Engineering performed immediate resampling at the location of the positive sample, and at other faucets near the location of the samples. All resamples were negative for both total coliform and fecal coliform.*

✍ ***Potential health effects****: Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially harmful, bacteria may be present. Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Potentially, however, microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.*

✍ ***Corrective actions****: Based on the resample results in 2000, Bioenvironmental Engineering concluded that the positive total coliform samples were not indicative of the quality of drinking water provided to us during that period.*

Table 3. Detected Regulated Chemical Contaminants

Contaminant	MCLG	MCL	Level Detected	Range	Violation?	Likely Source of Contaminant
Nitrate	10 ppm	10 ppm	1.9 ppm	1.0 - 1.9	No	Fertilizer use or runoff; natural deposit erosion, sewage and tank leaching
Fluoride	4 ppm	4 ppm	1.0 ppm	<0.1 - 1.0	No	Natural deposit erosion; water additive; fertilizer or aluminum factory discharge

Lead	0 ppb	15 ppb (AL for 90th percentile)	1.0 ppb (90th Percentile)	<0.5 - 1.0 ppb	No	Corrosion of household plumbing systems; natural deposit erosion
Copper	1.3 ppm	1.3 ppm (AL for 90th percentile)	0.14 ppm (90th Percentile)	.0024 - .14 ppm	No	Corrosion of household plumbing systems; natural deposit erosion; leaching from wood preservatives
TCE	0	5 ppb	0.78 ppb	<0.5 - 1.3	No	Metal degreasing sites and other factory discharge
PCE	0	5 ppb	.25 ppb	<0.2 - 0.4	No	Discharge from factories and dry cleaners
Arsenic	0	50 ppb	0.5 ppb	<.5 - 0.5	No	Erosion of natural deposits; runoff from glass and electronics production waste; runoff from orchards
Barium	200 ppb	200 ppb	1.1 ppb	0.6 - 1.1	No	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Chromium	100 ppb	100 ppb	3.4 ppb	1.8 - 3.4	No	Discharge from steel and pulp mills; Erosion from natural deposits
Sodium	N/A	N/A	29 ppb	18 - 29	No	Erosion of natural deposits
Di(2-ethylhexyl) phthalate	0	6 ppb	2.5 ppb	<0.6 – 2.5	No	Discharge from rubber and chemical Factories

All values reflect 2000 sampling results.

Table 4. Detected Regulated Radiological Contaminants

Contaminant	MCLG	MCL	Level Detected	Range	Violation?	Likely Source of Contaminant
Gross Alpha	0 pCi/L	15 pCi/L	2.8 pCi/L	3.6 - 4.4	No	Natural deposit erosion
Gross Beta	0 pCi/L	50 pCi/L [1]	6.4 pCi/L	4.8 - 8.0	No	Natural or man-made deposit decay
Radium 226	0 pCi/L	5 pCi/L	1.7 pCi/L	0.5 - 1.7	No	Natural deposit erosion
Radium 228	0 pCi/L	5 pCi/L	<2.9 pCi/L	<2.7 - 3.1	No	Natural deposit erosion
Uranium 234	0?pCi/L	20?pCi/L	.33 pCi/L	.01 - .33	No	Natural deposit erosion
Uranium 238	0?pCi/L	20?pCi/L	.51 pCi/L	.11 - .51	No	Natural deposit erosion

[1] EPA considers 50 pCi/l to be the level of concern for beta particles rather than the MCL.

Table 5 lists the levels and ranges of those unregulated contaminants that were detected. Unregulated contaminant monitoring helps EPA determine where certain contaminants occur and whether it needs to regulate them. Any other contaminants were not present or were below the detection limits of the laboratory equipment.

Table 5. Detected Unregulated Contaminants

Contaminant	Level Detected	Range	Likely Source of Contaminant
Trichloromethane (Chloroform)	0.25 ppb [1]	<0.1-0.7 ppb	Byproducts of water disinfection
Bromodichloromethane	0.58 ppb [1]	<0.1-1.4 ppb	Byproducts of water disinfection
Dibromochloromethane	1.0 ppb [1]	<0.1-2.1 ppb	Byproducts of water disinfection
Tribromomethane (Bromoform)	2.3 ppb [1]	<0.1-8.4 ppb	Byproducts of water disinfection
Chloromethane	0.5 ppb [1]	<0.5-0.5 ppb	Discharge from industrial processes
Nickel	16 ppb	6.1-16 ppb	Erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Chloride	46 ppm	36-46 ppm	Naturally occurring
Sulfate	7.5 ppm	6.9-7.5 ppm	Naturally occurring

[1]Level detected for this volatile organic compound is reported as the four-quarter running average.

WHERE CAN WE GET MORE INFORMATION?

Please contact the Public Affairs Office at 366-4202 if you have any questions regarding this CCR or would like additional information on your drinking water.

This CCR will be available for review at the Andersen AFB library, posted on the Andersen AFB homepage (http://www.andersen.af.mil/36MDG/ccr/Andersen2000CCR.pdf) as well as posted on the Andersen AFB Intranet (https://intranet.andersen.af.mil/andersen.htm.)

This CCR was prepared by Bioenvironmental Engineering (36 MDOS/SGOAB) in consultation with Detachment 3, Air Force Institute for Environment, Safety, and Occupational Health Risk Analysis (AFIERA) and Andersen's 36th Civil Engineer Squadron.

DEFINITIONS OF KEY TERMS AND ACRONYMS

Action Level -The concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system must follow.

Level Detected - Laboratory analytical result for a contaminant; this value is evaluated against an MCL or AL to determine compliance

Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

Range- The range of the highest and lowest analytical values of a reported contaminant. For example, the range of reported analytical detections for an unregulated contaminant may be 10.1 ppm (lowest value) to 13.4 ppm (highest value). EPA requires this range to be reported.

?g/L	Micrograms per liter; a unit of measure equivalent to part per billion (ppb)
ADA	American Dental Association
AFB	Air Force Base
AIDS	Acquired Immune Deficiency Syndrome
AL	Action Level
CCR	Consumer Confidence Report
CDC	Center for Disease Control
CFR	Code of Federal Regulation
EPA	Environmental Protection Agency
FDA	Food and Drug Administration
GWA	Guam Waterworks Authority
HIV	Human Immunodeficiency Virus
MCL	Maximum Contaminant Level
MCLG	Maximum Contaminant Level Goal
N/A	Not applicable
PCE	Tetrachloroethylene or Perchloroethylene
pCi/L	Picocuries per liter; a measure of radioactivity in water
ppb	parts per billion; a unit of measure equivalent to a single penny in $10,000,000
ppm	parts per million; a unit of measure equivalent to a single penny in $10,000
SDWA	Safe Drinking Water Act; Federal law which sets forth drinking water regulations
TCE	Trichloroethylene